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A KEY TO THE SPECIES IN *HYALOMYZUS* (HOMOPTERA: APHIDIDAE) IN NORTH AMERICA, WITH THE DESCRIPTION OF A NEW SPECIES[1]

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Abstract.—Keys are given for the apterous and alate viviparae of *Hyalomyzus* Richards known to occur in North America and Puerto Rico. All of the morphs of *Hyalomyzus mitchellensis*, n. sp., are described. They were collected on *Hypericum mitchellianum* Rydberg at Mt. Mitchell, N.C.

Richards (1958) described the genus *Hyalomyzus* and characterized it as follows: Alate viviparae with many secondary rhinaria on antennal segments III, IV, and V, and without a dorsal sclerotic patch on the abdomen; apterous vivipara with the dorsum of the abdomen strongly wrinkled on segments I–IV; cornicles swollen, generally imbricated. Other characters are similar to *Myzus* Passerini. Nielsson and Habeck (1971) discussed the relationship of *Hyalomyzus* with closely related genera, and placed *H. collinsoniae* (Pepper, 1950) as a synonym of *H. eriobotryae* Tissot (1935). Eastop and Hille Ris Lambers (1976) and Smith and Parron (1978) considered *H. collinsoniae* to be a valid species.

Measurements are in mm in the following description and key.

Hyalomyzus mitchellensis Smith, New Species

Figs. 1A–D, 2A

Fundatrix (Fig. 1A).—Color of living material, yellowish green, 1st-instar nymphs, yellowish. Color of cleared specimens, dusky on antenna beyond mid-section of antennal segment III, tip of tibiae, tarsi, siphunculi, cauda, anal plate, sclerotic areas on integumental sutures of abdomen.

Measurements (4 specimens).—Body length, 1.45–1.77; head width,

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0.33–0.40; length antennal segment III, 0.19–0.25, IV, 0.11–0.17, V, 0.15–0.16, VI, 0.09–0.13 + 0.11–0.16; rostral IV + V, 0.08–0.09, metatibia, 0.61–0.68; metatarsomere II, 0.08–0.11; siphunculus, 0.31–0.36; cauda, 0.16–0.17.

Some specimens collected May 12, 1969, with 2–6 sensoria on metatibia. Antenna without secondary rhinaria, head rugose with only slight indication of antennal tubercles. Siphunculi slightly imbricated. Cauda bearing 4 setae. Tarsal chaetotaxy, 3-3-3.

Apterous vivipara (Fig. 1B).—Color of living specimens, pale to dark green with conspicuous black siphunculi. Cleared specimens, dark on antennal segments IV, V, and VI, siphunculi, cauda, anal plate, tip of tibiae, and metatarsomere II. Dusky on head, rostrum, and sclerotic areas on intersegmental areas of dorsum of abdomen.

Measurements (first measurement is that of holotype) (range of 9 specimens).—Body length, 1.35 (1.34–1.90); head width, 0.36 (0.36–0.42); length of antennal segment III, 0.26 (0.21–0.31), IV, 0.20 (0.17–0.28), V, 0.17 (0.15–0.23), VI, 0.10 (0.09–0.11) + 0.20 (0.18–0.21); rostral IV + V, 0.08 (0.06–0.09); metatibia, 0.66 (0.62–0.88); metatarsomere II, 0.09 (0.08–0.11); siphunculi, 0.33 (0.31–0.39); cauda, 0.17 (0.12–0.18).

Cauda bearing 4 (3–5) setae, tarsal chaetotaxy 3-3-3. Abdomen strongly wrinkled on dorsal surface.

Alate vivipara.—Color of cleared specimens, dark on head, antenna, legs, thorax, siphunculi, cauda, and anal plate. Dusky sclerotic areas on intersegmental area on dorsum of abdomen.

Measurements (4 specimens).—Body length, 1.42–1.58; head width, 0.36–0.46; length antennal segment III, 0.43–0.50, IV, 0.28–0.32, V, 0.21–0.26, VI, 0.12–0.13 + 0.22–0.28; rostral IV + V, 0.07–0.09; metatibia, 0.75–0.98; metatarsomere II, 0.09–0.11; siphunculi, 0.30–0.33; cauda, 0.14–0.17. Secondary rhinaria on antennal segment III, 19–28, IV, 13–21, V, 3–8.

Cauda with 4–5 setae, tarsal chaetotaxy 3-3-3 (2). Cubitus of hindwing present or absent. Venation of forewing (Fig. 2A), dusky but very slight fuscus area on margins of veins.

Apterous male (Fig. 1D).—Color of living specimens pale, dark green to brownish, dark on tip of abdomen; siphunculi brown black. Color of cleared specimens dusky to dark on head, antenna, legs, siphunculi, cauda, anal plate, and sclerotic areas on abdomen.

Measurements (4 specimens).—Body length, 0.65–0.88; head width, 0.22–0.28; length antennal segment III, 0.13–0.18, IV, 0.09–0.11, V, 0.09–0.11, VI, 0.07–0.08 + 0.11–0.13; rostral IV + V, 0.06; metatibia, 0.35–0.41; metatarsomere II, 0.06–0.08; siphunculi, 0.19–0.20.

Antennal segment III with 7–13 secondary rhinaria, IV, 4–8; V, 2–3; VI, 0. Antennal segment III and IV may not be distinctly separated. Dorsum of abdomen slightly wrinkled.

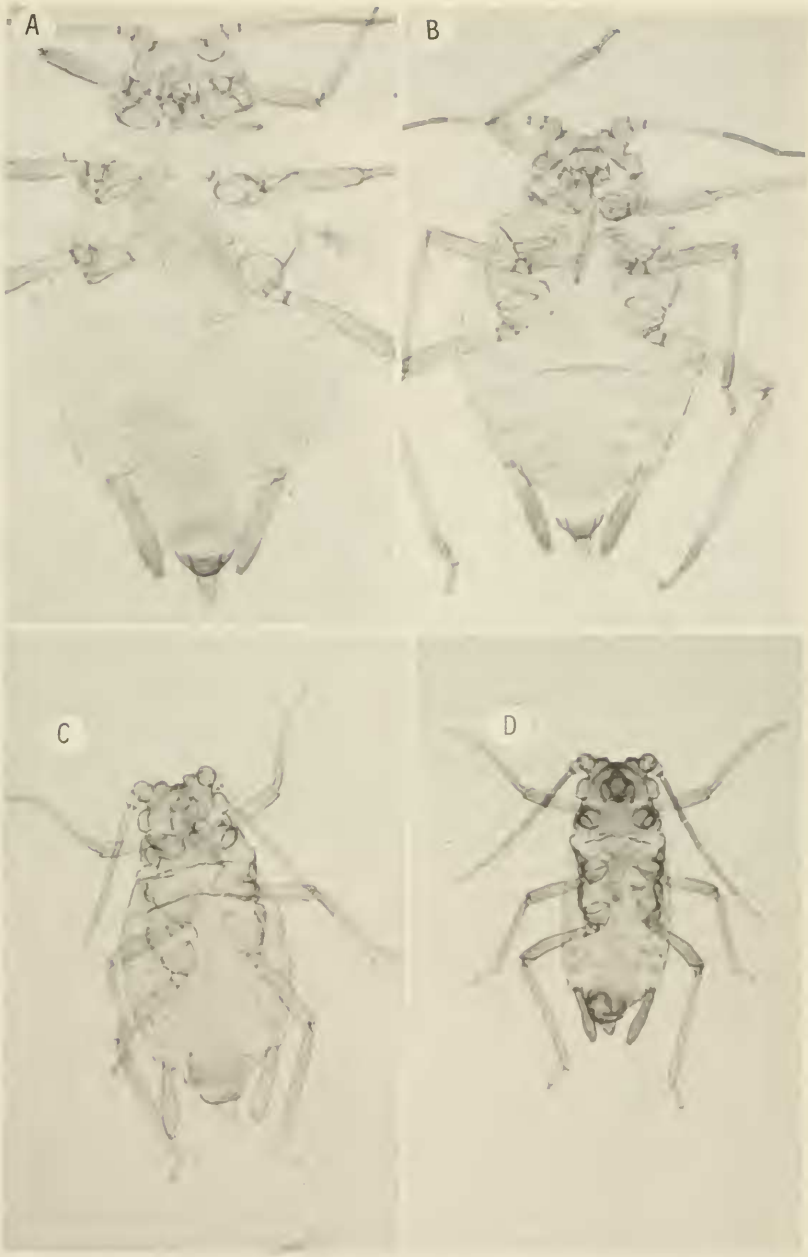

Fig. 1. *Hyalomyzus mitchellensis* from *Hypericum mitchellianum*, Mt. Mitchell, N.C. (all figures the same magnification). A, Fundatrix, collec. 69-111, May 12, 1969. B, Apterous vivipara (holotype), collec. 79-4, June 19, 1979. C, Apterous ovipara, collec. 67-417, October 11, 1967. D, Apterous male, collec. 67-417, October 11, 1967.

Apterous ovipara (Fig. 1C).—Color of living specimens, dark green to brownish, dark on tip of abdomen, siphunculi brownish black. Color of cleared specimens, similar to apterous male except abdomen usually not as dark and sclerotic areas on intersegmental areas on dorsum of abdomen prominent.

Measurements (5 specimens).—Body length, 0.96–1.32; head width, 0.29–0.31; length antennal segment III, 0.10–0.17, IV, 0.09–0.12, V, 0.08–0.12, VI, 0.07–0.08 + 0.12–0.15; rostral IV + V, 0.06–0.07; metatibia, 0.37–0.43; metatarsomere II, 0.07–0.09; siphunculi, 0.20–0.27; cauda, 0.09–0.11.

Antennae without secondary rhinaria. Metatibia with numerous sensoria on the basal ¾, sensoria confined primarily to the ventral portion. Cauda with 4 setae.

Eggs.—Deposited on tips of shoots. Eggs white when first deposited, becoming dark olive green to black later.

Type-locality.—Mt. Mitchell, North Carolina.

Types.—Holotype from collection 79-4. Apterous specimen no. 4 at 6 o'clock position on slide, collected 20 June 1979 on *Hypericum mitchellianum* Rydberg, Mt. Mitchell, North Carolina by C. F. Smith and C. K. Smith. All other specimens listed below are paratypes. The holotype and paratypes are in the National Museum of Natural History, Washington, D.C. (USNM); paratypes in the collections of USNM; Canadian National Collection, Ottawa; British Museum (Natural History), London; North Carolina State University; and the author.

Collections.—All known specimens of this species were collected on *Hypericum mitchellianum*, on Mt. Mitchell, North Carolina along the "Camp Alice Trail," 9 September 1963, collection 63-64, C. F. Smith, C. K. Smith, J. O. Pepper, A. N. Tissot (2 slides); 11 October 1967, collection 67-417, C. F. Smith (7 slides); 10 September 1968, collection 68-208, C. F. Smith, M. G. Robertson (1 slide); 12 May 1969, collection 69-11, C. F. Smith, M. G. Robertson (15 slides); 11 June 1969, collection 69-168, M. G. Robertson, C. F. Smith (11 slides); 11 June 1976, C. F. Smith, collection 76-39 (18 slides); 12 August 1976, collection 76-46, C. F.Smith, M. Cermeli (10 slides); 20 September 1976, collection 76-56, C. F. Smith, C. K. Smith (5 slides); 10 August 1978, collection 78-258, C. F. Smith, C. K. Smith (3 slides); 12 October 1978, collection 78-260, C. F. Smith, C. K. Smith (4 slides); 12 October 1978, collection 78-261, C. F. Smith, C. K. Smith (1 slide); 19 June 1979, collection 79-4, C. F. Smith, C. K. Smith (32 slides).

Biology.—*Hyalomyzus mitchellensis* apparently spends its entire life cycle on *Hypericum mitchellianum* at the base of leaf axels and flower buds, and on stems of its host under rocks. Alate viviparae were abundant June 1979, at the time of the other collections alates were absent or very scarce. Males and oviparous females were collected 11 October. Fundatrices were

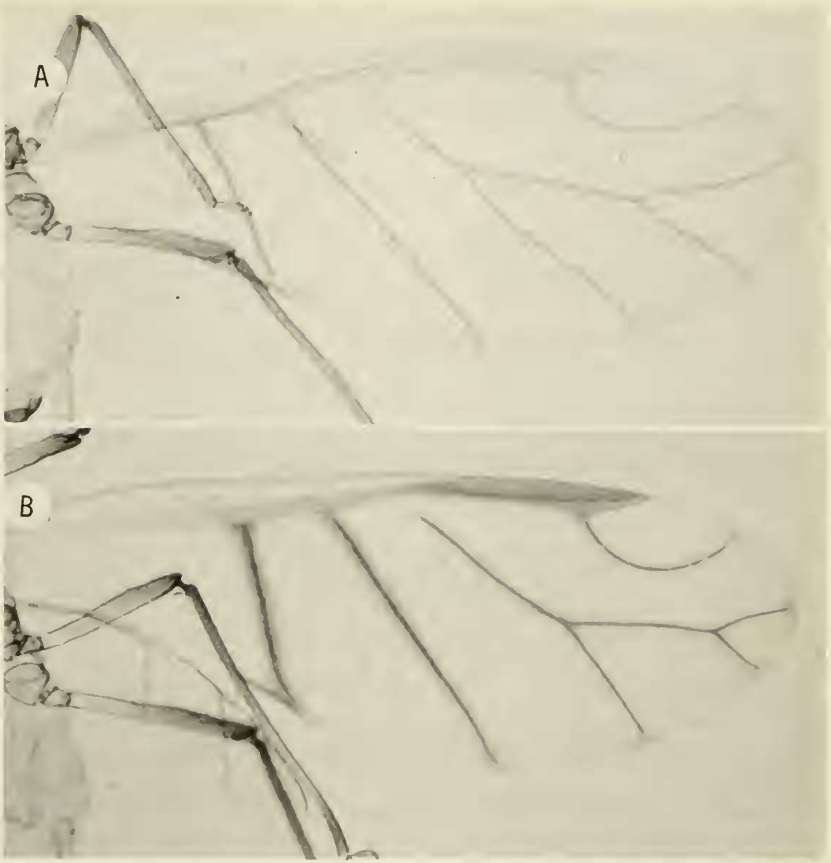

Fig. 2. Wings of alate viviparae. A, *Hyalomyzus mitchellensis* from *Hypericum mitchellianum*, Mt. Mitchell, N.C., collec. 79-4, June 19, 1979. B, *H. collinsoniae* from crab apple (*Pyrus augustifoliae*), Laurel Springs, N.C., collec. 6-247, July 4, 1966.

collected on 12 May, some specimens had slightly swollen metatibia bearing 2–6 sensoria.

Etymology.—Named for Mt. Mitchell, the type-locality.

Discussion.—The alate and apterous viviparae of *Hyalomyzus mitchellensis* can be separated from other species of *Hyalomyzus* by characters given in the key. I do not have specimens of the other morphs of the other species of *Hyalomyzus*.

Key to Apterous Viviparae of *Hyalomyzus*

1. Processus terminalis shorter than antennal segment III 2
– Processus terminalis equal to or longer than antennal segment III 3

2(1). Abdomen without sclerotic spots. Siphunculi and antennal segments IV–VI not distinctly darker than base of antennal segment III. On *Crataegus, Aster, Hypericum* ... *sensoriatus* (Mason) (1940)
– Abdomen with sclerotic spots (Fig. 1B). Siphunculi and antennal segments IV–VI distinctly darker than base of antennal segment III (Fig. 1B). On *Hypericum mitchellianum* ..... *mitchellensis*, new species
3(1). Siphunculi dark, at least distal ½. Not on *Monarda* 4
– Sipunculi pale. On *Monarda* ..... *monardae* (Davis) (1911)
4(3). Not on *Jussiaea* 5
– On *Jussiaea* ..... *jussiaeae* Smith (1960)
5(4). Antennal segments I and II pale. Not on *Collinsonia* 6
– Antennal segments I and II dark. On *Collinsonia* ..... *collinsoniae* Pepper (1950)
6(5). Length of antennal segment III, 0.27–0.40, IV, 0.18–0.29, V, 0.20–0.28, VI, 0.10–0.13 + 0.49–0.52 ..... *tissoti* Nielsson and Habeck (1971)
– Length of antennal segment III, 0.40–0.50, IV, 0.33–0.43, V, 0.28–0.33, VI, 0.11–0.13 + 0.46–0.55 ..... *eriobotryae* Tissot (1935)

Key to Alate Viviparae of *Hyalomyzus*

1. Processus terminalis less than 3× length of base of antennal segment VI 2
– Processus terminalis more than 3× length of base of antennal segment VI 3
2(1). Secondary rhinaria on antennal segment III, 19–23, IV, 15–18, V, 3–5. On *Hypericum mitchellianum* ..... *mitchellensis*, new species
– Secondary rhinaria on antennal segment III, 45–62, IV, 27–43, V, 11–17. On *Crataegus, Aster, Hypericum* ..... *sensoriatus* (Mason)
3(1). Alate vivipara with antennal segment V with 0–11 secondary rhinaria. Anal vein of forewing may or may not be distinctly bordered (Fig. 2) 4
– Alate vivipara with antennal segment V with 10–20 secondary rhinaria. Anal vein of forewing not distinctly bordered ..... *eriobotryae* Tissot
4(3). Antennal segment III usually with 20 or more secondary rhinaria. Not on *Monarda* 5
– Antennal segment III with 8–12 secondary rhinaria. On *Monarda* ..... *monardae* (Davis)
5(4). Antennal segment III with 11–40 secondary rhinaria. Anal vein of forewing not distinctly bordered 6
– Antennal segment III with 40–52 secondary rhinaria. Anal vein of forewing distinctly bordered (Fig. 2B) ..... *collinsoniae* Pepper

6(5). Antennal segment III with 11–25 secondary rhinaria. On *Crataegus* sp., *Isnerdia intermedia*, *Drosera* sp. ..... *tissoti* Nielsson and Habeck

– Antennal segment III with 26–40 secondary rhinaria. On *Jussiaea* ..... *jussiaeae* Smith

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